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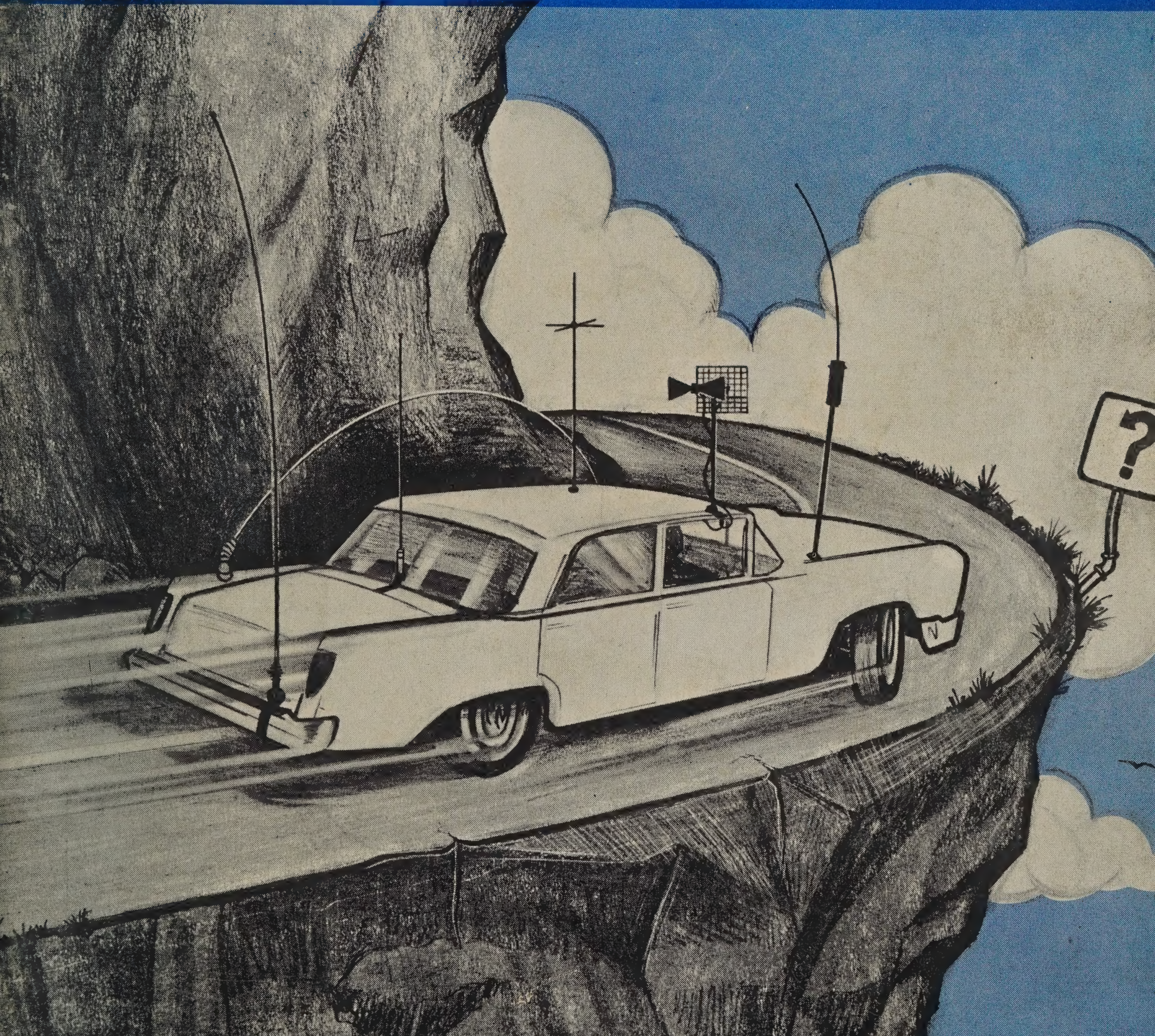

THE PROFESSIONAL COMMUNICATIONS MAGAZINE

Where Are We Going?

—page 4

May we bend an "ear" for a moment?

There's much to be said for the slim, inconspicuous, yet professional appearance of the Antenna Specialists brand low band mobile antennas. Still more for their clean, crisp signal and unlievably low noise level.

But the real point of this message is a hidden virtue you can't see or hear. It's called "17-7 stainless steel", one of the most resilient alloys ever made. We use nothing else *even though it costs considerably more than the stainless steels used in run-of-the-mill whips.*

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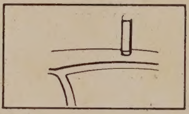
Available in three simple and attractive mounts . . . 20 ft. cable with connectors attached . . . take your choice!



MODEL ASP-268
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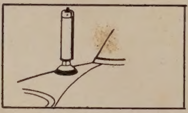

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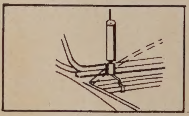

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SPLATTER

Editorial Notes from
CH Managing Editor
JIM KYLE, K5JKX

We hinted last month; we're promising this month: next month it will be here.

What are we talking about? The "new look" in COMMUNICATION HORIZONS, that's what. And unlike the late unlamented "new look" in fashions (Gad! Was it *that* long ago?), we expect our own "new look" to be around for a while.

In this strange business of magazine production, there's a great danger of getting too close to the trees to see the forest. We tend to get a bit too wrapped up in our own efforts at times—and sound off too loud and long on problems, plans, and (hopefully) achievements which mean little outside the trade.

So we're not going to tell you here about any of these things. We're just going to outline—as briefly as possible — what you can expect from CH beginning with the June issue:

The magazine will be bigger. Page size is being increased to 7 by 10 inches (same size as TIME Magazine). The number of pages will stay the same for now, but the bigger size will mean you'll get 30 percent more magazine each month.

The physical appearance will be a bit different; we're changing to a different type face. Experiments (we'd tell you all about them, but this is that danger area mentioned before) have showed no difference in the readability of the new type—but it lets us put something like 40 percent more information in the same space. Add this to the 30 percent more space, and you can see you'll get nearly twice as much information per issue.

We'll continue our policy of up-to-date management material coverage, with special emphasis on FCC rule changes and petitions.

However, we're expanding our coverage to include maintenance-oriented material in equal quantity. We're especially interested in reporting new and useful maintenance hints, and are going all-out to get these.

Naturally, any change in an established institution (us—an institution?) is bound to create some comment somewhere. We hope you like it—but regardless, we want to know what you think! To set up a parallel from communication theory, we want some "error-correction signal" or "feedback" to find out the opinions of you, there. You—the most important man on the CH team—our reader!

By the way, you may have noticed a new name at the top of this column this month. That's another of the changes involved in our "new look". The Boss went a bit overboard in introducing me last month, so I'll refrain from additional comment—except to repeat his closing remark: I'm "available six days per week to help you get more use and usefulness from your two-way radio interest"—and would count it a personal favor if you'd drop me a line whenever you have a comment (good or bad—makes no difference) about CH, an article, or an article request.

Until next month, and the new look in person, that wraps it up.

jk

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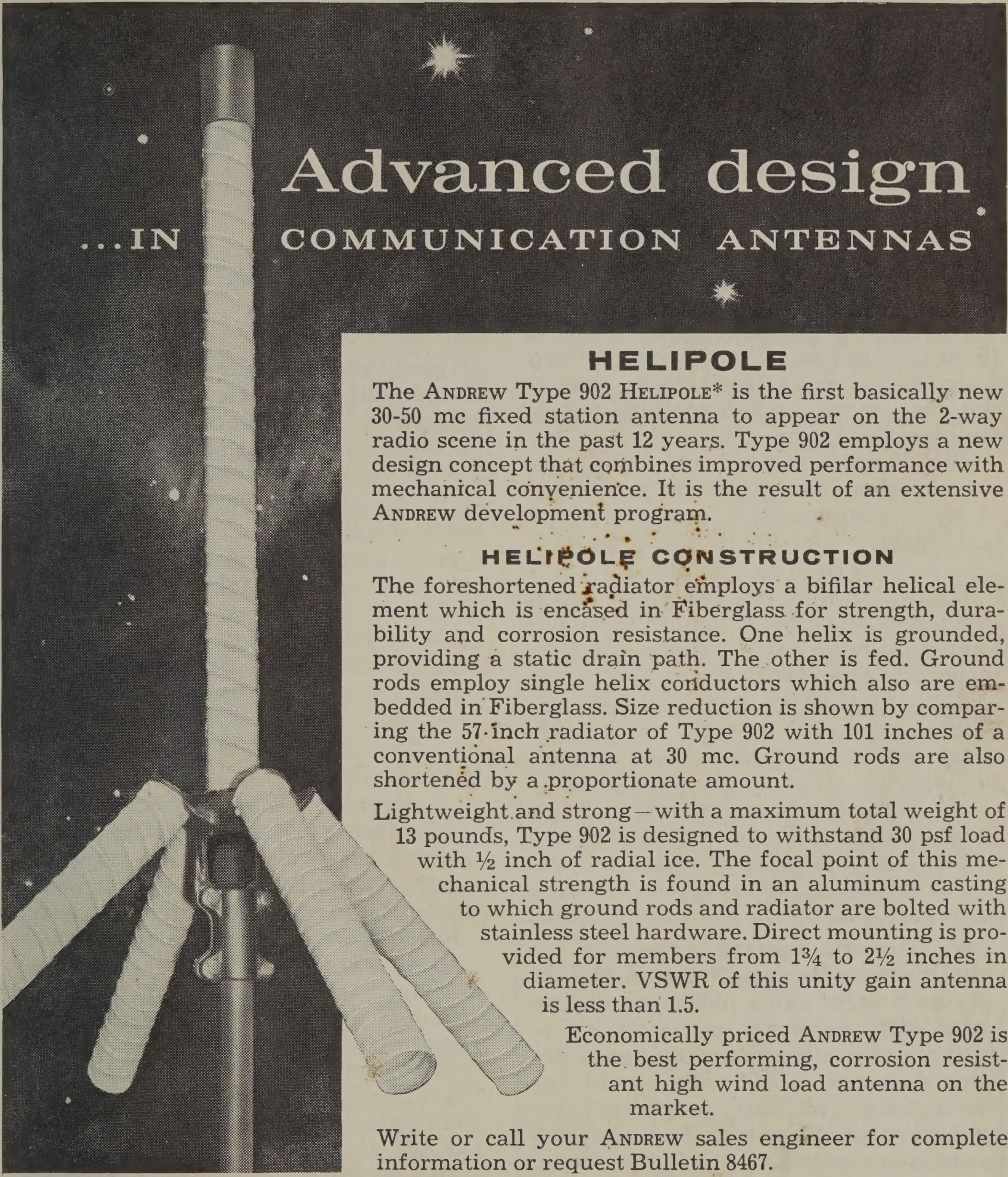
Communication Horizons — The voice of the Professional Communications Industry



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HELIPOLE CONSTRUCTION

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Where Are We Going?

by Theodore Merrill
Alameda, California

Mobile radio is a not-so-vast hole in the ground. True, it is somewhat larger by additional frequencies than it was 15 years ago, but the equipment produced is grinding the hole so deep it becomes more and more difficult to see over the top.

The situation reminds one of an auditorium where people by twos enter for private conversation. As more and more arrive the din gets louder, tempers shorter and actual transfer of intelligence diminishes. Megaphones or earphones may be brought in to talk louder or hear better. Finally, an enterprising duo brings boxes to stand on so they may shout over the heads of others. Soon, all are on boxes, then come ladders and so on . . . ad absurdum.

The same confused condition seems to describe mobile radio. Thousands of dollars are spent each year to make one transmitter overcome another, or a receiver out-hear its competitor. Equipment costs rise. Feeble screams call for a larger auditorium, but apparently no effort is spent in exploring the common sense approach: Isn't there a more effective way of utilizing the medium??

Mr. Merrill, former president of the Western Region, National Mobile Radio System and a principal author of NMRS testimony in the 1959 frequency-allocation hearings, sent us this material as his "attempt to answer some of the questions" we raised in previous editorials, and, to continue quoting him, "perhaps, pose a few of my own." His suggestions and comments are sure to rouse discussion throughout the communication industry—and this was his expressed intention in submitting this paper. Naturally, the opinions and comments expressed are solely those of Mr. Merrill and do not necessarily reflect those of CH, its editor, or its publisher. Our aim is to promote discussion along these lines — and we eagerly solicit *YOUR* reply to this paper.

Let's leave communication theory in the textbooks and take a real practical look at what is necessary in the field of voice communication. If we could get 10% of the energy and money that is spent on technical development and apply it to the use aspects, our troubles would be over and mobile radio would have its voice.

I suggest we face the fact that this is the transportation business and approach the problem in the same collective way that railroads, truckers and shipping companies approach theirs. Whether we are in development, manufacture, sales, use or service, our equipment is intended for just one purpose, the transportation of intelligence.

That this commodity cannot be loaded on pallets, or tied together with string alters not one whit the fact that we are still faced with the common traffic problems of shipping, receiving, scheduling and warehousing, and in case we forget—the inevitable tracing.

In exploring the voice communication needs of the public, it is natural to turn first to the telephone. This amazing devise, or should I say system, has had such fantastic growth that one of its participants is now the largest corporation in the world. In analysing the telephone, it becomes apparent that two distinct functions are being served: the ability to transmit intelligence, and the ability to receive it.

From our telephones at home or the office, we want the ability to call any one, anywhere at anytime we desire. On the other hand from this same instrument we want the ability to be summoned to by a rather limited group of customers, friends or associates. Without doubt the telephone is a very large factor in every business or private life, but in spite of its value it can also be an instrument of torture to the busy housewife, harried business executive or public figure.

One of the greatest advantages of the telephone is that it is fastened to the wall—yet there are some who would do away with this feature, snip the wire, and hang the greatest ball of chain around our necks in the history of mankind. Not only is this approach unnecessary, undesirable and impractical, but it seems also financially impossible. This is not to say the public has no need for personal voice communication when away from the land wire telephone system, but it is to say that the problem is different and should be approached in a logical way.

Few people in this land of ours have emergencies so fast and so frequently that they cannot get to a land wire telephone in sufficient time to report their problem. On the other hand, probably none of us escape those situations when we would give double, triple, or even a thousand times normal compensation to be contacted.

The answer seems obvious. We need a national system of selective signalling. Look at a market of 180,000,000 or so instead of the estimated 1½ million now permitted the use of non-broadcast radio! Let's not even make it complicated, forget about pocket sets. An automobile receiver would be adequate for 80 percent of the market—let the rest wait until progress permits one for bathtub wear.

Another obvious place where non-broadcast radio misses the boat is in the field of driving safety. Many of us can remember the early thirties when traffic lights had bells, policemen with whistles were common even in the suburbs, where 15 to 20 mph in town and 45, really was zooming on the highway. In those days drivers had help they don't now have — *the ability to hear their hazards.* Cars were loosely put together with wood and canvas, many were open and broadcast receivers were yet to arrive.

Now some thinkers in the automotive and electronic industries are talking about radio controlled automobiles. They are going to sink wires in the pavements and vehicles will move by radar. While this may have limited application in the future, at present it seems a most complicated and expensive way of making radio available. At this stage it seems to make about as much sense as providing a mechanical arm because the good one is tied behind the back.

The sense of hearing is one of God's greatest gifts. In everything else we do it is an essential part of our personal armament. Why should we be denied use of this asset in the most dangerous killer of all? Can anyone say that the state of the art does not permit low power, low cost transmitters to be used by traffic officials by the thousands and cheap receivers to be placed in the millions of road vehicles? On a foggy night, wouldn't a low tone be welcome warning that the bridge ahead was out, or a black box hurriedly dropped by the highway patrolman be a sensible way of advising there was a wreck over the next hill . . . and the traveler, would he not appreciate the suggestion; "move to the right lane for the Pasadena turn-off?"

The smallness of the non-broadcast radio industry seems largely the result of a fixation that where there is a receiver there must be a transmitter. Presumably this is a natural result of mobile radio's birth in the safety services where such a need is real.

However, this is certainly the time to recognize the fact that saturation is upon us and we can't always be enlarging our auditorium. As one radio executive put it, "We can't all have our own radio systems anymore than we can all fly our own helicopters."

Obviously we must foster the common carrier concept, but in the meantime let's look around. Certainly there is more work that non-broadcast radio can do other than imitate the land wire telephone. ■

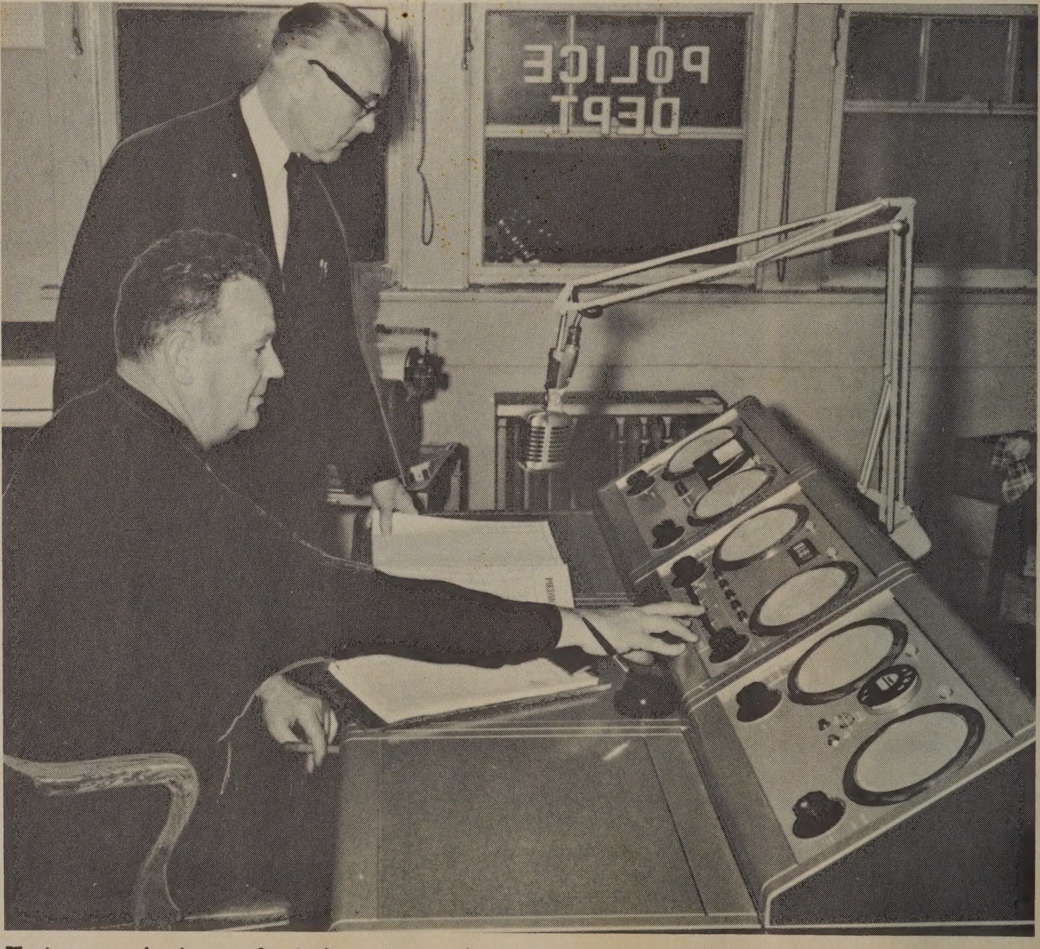
COOK'S COMMUNICATION CONSOLES

Who needs a console? If your system is confined to single-channel use and you have no need to monitor any additional frequencies, you might get by without one—but virtually every public-safety installation in the nation, as well as many industrial and other systems, uses multiple-channel equipment. So who needs a console? Most likely, you do.

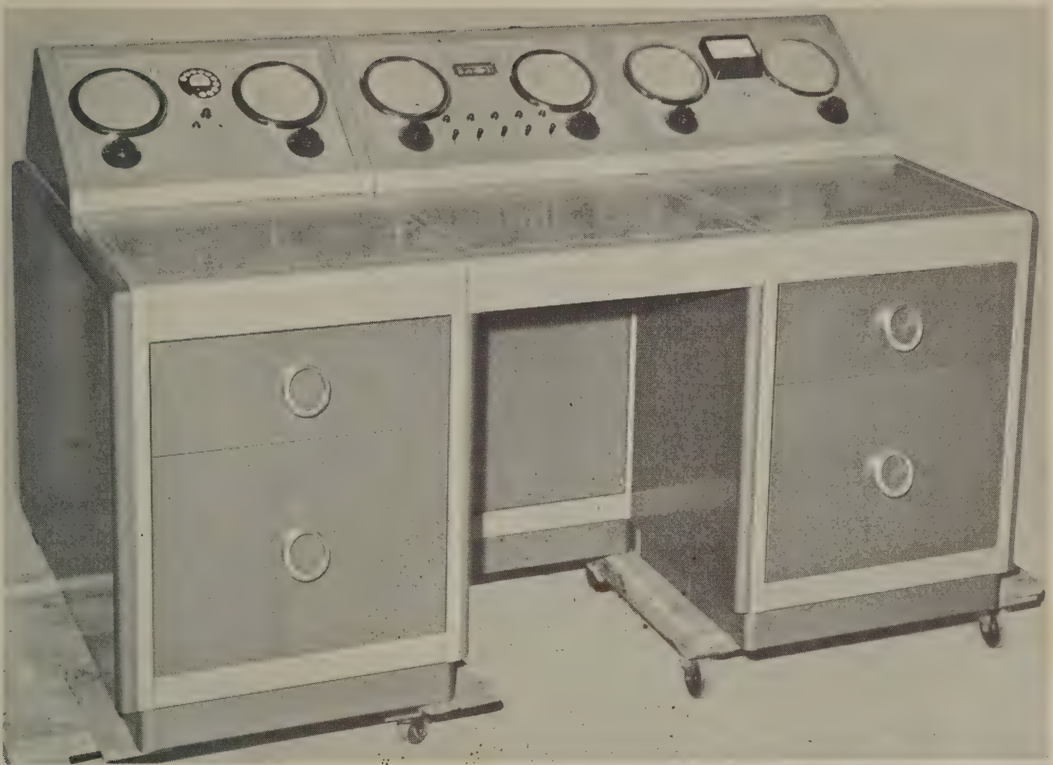
Since a console must be designed to meet the requirements of a specific system, it can't be mass-produced. Still, a few specialists concentrate on the building of consoles. One of these is Electronic Specialties Co., Fresno, Calif.

Donald R. Cook, president of the firm, summarizes the desirable features of any console as follows:

1. Capability of monitoring any required number of channels. Each channel equipped with its own speaker, with individual volume control.



Trying out the latest Cook Console are Capt. Tryon of the Piedmont, Calif., P. D. (seated) while Chief Pflaum looks on.



Details of the Piedmont console are shown in this view. Note recessed clock above switches.

2. Indicator to show which channel is activated at any time.
3. Semi-muting of inactive channels when transmitting on one active channel.
4. Single microphone amplifier to allow the operator to communicate to any number of base stations or intercom to any remote.
5. Cabinet of modern design, capable of being made to fit any physical-size area available and of allowing for future expansion.
6. Equipment, amplifiers, power supplies, and all circuits complete inside the cabinet.
7. Each line amplifier and other components built on separate chassis to allow plug-in expansion for future.
8. All muting and switching accomplished by relays, to allow use of foot switches and possible two-point control.

This imposing list of features is completely implemented in Cook's Consoles. One of the most recent, built for the City of Piedmont, Calif., and installed on March 1 of this year, is shown in the photographs.

Original specifications for this unit were that it be capable of handling four channels, and that it include "Secode" equipment to be compatible with the intersystem network of the state of California.

As installed, the console provides facilities for six channels although only four of them have line amplifiers installed (the other two are spares for possible expansion). All original specifications were fulfilled.

In addition, the unit includes an illuminated VU meter which can be switched to any one of the six channels; all components are high-reliability types.

As Cook describes it, "All relays used were hermetically sealed, plug-in type for ease of maintenance. The power supply uses plug-in silicon rectifiers.

"All sub-chassis plug into each other. This allows future separation of cabinets if expansion is required. The only interconnected circuits that do not plug in are the line input circuits.

(Please turn the page)

Change Coming . . .

After Conelrad, What?

by Robert E. Tall
Chief, CH Washington Bureau

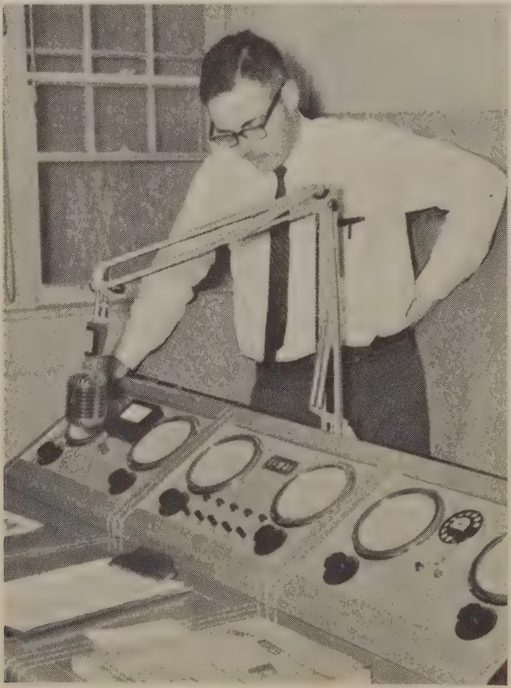
This version of the Conelrad outlook may be outdated at the time you're reading it. **Things are that nip and tuck on the situation at this point in Washington.** The program, for the mobile radio field, may be nipped by the Air Force pointing out that it is tired of riding herd on a bunch of radiations which no longer pose danger to the US from enemy bombers homing in on target cities.

At the same time, there is a danger that the program will be tucked under the wing of government people who would otherwise find themselves out of a job, and perpetuated on the illogical basis that it doesn't cost much from a national standpoint — now that broadcast station expenses are already expended; that nobody in the mobile radio field is paying much attention to the program, anyway; and that the more government in this area, the better.

The Defense Department has gone on record in the public press that it **doesn't give a hang** about mobile radio radiations. It didn't say this exactly, but it did say it cares only about general public warning of imminent attack, and post-attack, recovery communications. Either way, it's hard to justify a mobile radio system licensee's buying of a Conelrad monitor receiver.

DOD says merely that it's working on revisions in the Conelrad program. How long and how hard DOD is working on the program hasn't been publicly expressed, despite a number of

(Continued on Page 24)



Inspecting the Piedmont console at delivery is W. F. Corbin, Jr., president of General Communications Engineering, Oakland, Calif.

MORE ON CONSOLES . . .

"Each speaker, switch, and speaker pad has an engraved plastic plate indicating the function of each control."

Indicator lamps used are neon, throughout the unit. "Replacement is practically never required," Cook explains.

Engineering and actual construction layout of the units is done by Don Bybee, Cook's chief engineer. The original design concept, layout, and type of construction was done by Cook himself.

Cook's firm has been in the console business (as a sideline only—it's one of the country's largest General Electric distributors and service centers, maintaining more than 3,000 units in service) for 10 years. Their initial console handled 20 remote line inputs simultaneously.

"We are interested in building more," said Cook, "but since layout through to installation requires coordination with the ultimate user, we will have to confine our work to those in California at this time."

The Facts On 450

By J. A. McCormick
Communications Products Department
General Electric Company
Lynchburg, Virginia

Are you planning to install a new mobile radio system or change out the system you are now operating? If so, consider the 450 Mc band, particularly if the low band and high band frequencies are fully occupied in your area. *In today's crowded spectrum, your best chance of obtaining a clear channel is in the UHF* (450 *Mc*) *band.* With the narrow band standards coming into full effect as of November 1, 1963, this would be a good time to appraise your existing mobile radio system.

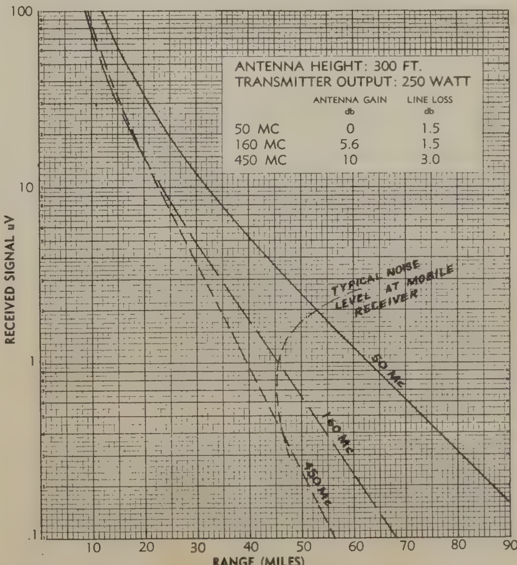
There is much to commend the use of the UHF band. It is the only band in which *Mobile Relay* type systems can be licensed in the Special Industrial and Business Radio Services. A base station at some elevated location such as a skyscraper, hilltop or mountaintop, can provide relatively large area coverage. If the base station is a Mobile Relay type station it can provide longer car-to-car range than direct car-to-car communication in the low band or the high band.

The 450 Mc band is quite free of noise from all sources, natural and man-made and this factor alone strongly recommends the use of these frequencies for city use where noise levels are always high. The very short wave lengths at these frequencies make gain antennas very practical and they are in extensive use in both base station and mobile applications. Omni-directional station antennas having gains of 6 to 10 db are in wide use and mobile antennas having a gain of 3 to 5 db are available.

Because of the very short wave length, the UHF frequencies have greater penetration than either the high band or the low band. Signals can be received inside buildings, under elevated railway structures and through other such man-made obstacles to radio transmission. For this reason the 450 Mc band is ideal for covering such dense metropolitan areas as New York City.

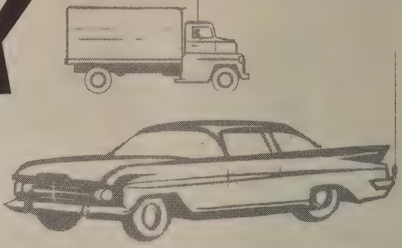
With all the apparent advantages, why haven't the 450 Mc frequencies come into greater use by the Land Mobile Services? Under a given set of circumstances the range of a 450 Mc system is often less than that of high-band and low-band systems. However, **this is almost always due to the fact that the base station antenna is not elevated sufficiently above the average ground level.**

Wherever mountain tops or skyscraper locations have been available, users have been well pleased with the range provided by the 450 Mc frequencies. In the Los Angeles area, for example, there are a great number of installations on Mount Wilson and, from that location, users are obtaining ranges in the order of 100 miles.



Range comparison, base-to-mobile, for all 3 mobile bands.

SHOP TALK



By I. Kay Redd, Jr.

Sometimes in magazines you will find little known laws noted such as: "In Washington, D. C., it is still illegal to drink whiskey standing up," or, "Did you know that in Virginia it is legal to sell beer on Sunday but not milk?"

Well, certain F.C.C. rules and regulations might well fall in the same category, such as: It is not a federal violation for an unauthorized person to tamper with a transmitter if he does not hold a valid license.

You should know how to stay on the legal side as far as your own license is concerned, but it is *also* your responsibility to see that your customers are informed of the F.C.C. rules that apply to *their* licenses. These rules were not covered well when you studied for your first- or second-class operator license, but if you are going to service two-way radios you should be well informed.

You may say you are not legally obligated or qualified to keep your customers informed; it's true that you certainly must not give legal advice, but you *are* morally responsible that your customers are informed, particularly contract customers, and you *can* be legally liable if you install an illegal system.

In the past few years the number of stations has multiplied rapidly, but the F.C.C. has not substantially increased the number of inspectors. Therefore, stations are seldom inspected. Many violations never come to F.C.C. attention.

If your customers ignore the rules, or have an apathetic regard for them, it is much better for you to inform them of this negligence than to wait until the F.C.C. inspector takes more drastic measures, such as license revocation. You may get by with just telling your customer to "read the rules," but usually you will have to point out which rule to read—and this means that you yourself must be familiar with the rules.

The F.C.C. conveniently mails with each license a bulletin giving briefly the most important points to remember about the rules, but these are too brief for much use. Your customer should have a full copy (Volume V, from the Government Printing Office, Superintendent of Documents, Washington 25, D. C., $2.50). When he signed his license application he certified that he had these rules. However, there is really some doubt that every single applicant actually *had* the rules at the time he signed. Nevertheless, he should have them—particularly when an F.C.C. inspector checks his station.

One of the worst things you can do is to repair, install, or otherwise operate a licenseless transmitter. This means that you should be familiar with the customer's license, know when it expires, and know what types of mobiles and emission he is licensed for.

When your customer purchases additional mobiles, make sure he will not have more than his license allows. If he buys units, make sure they meet required standards. You should also see that the carrier-on indicator is operating and that mobiles have a transmitter identification tag.

I am sure many shops do not realize that the annual frequency, modulation, and power measurements do *not* have to be made by a licensed technician, (10.108, 11.108, 16.108). However, if adjustments are made, then a licensed technician is required. From this you may assume that it is perfectly legal for a station licensee to install his own stations and make the measurements without your help. He doesn't even need an approved frequency and modulation meter; he is only required to use a "suitable procedure" (10.108, 11.108, 16.108).

A service man is responsible to give his customer certain items for his "station records," (10.161, 10.162, 11.160, 16.160). These records must contain: (a) frequency and modulation measurements, plus power measurements for the base station, (b) service or maintenance including: 1—details of service, 2—name and address, 3—license number and expiration date (if not a regular or full time employee). Also in the log must be: (c) operator name and period of duty, (d) communications with other base stations (except Part 10) including: 1—Call Sign of other station, 2—nature of communication (except Part 11) and, 3—date, time, and duration. It is not necessary to log each call. The log book and other records must be retained for one year.

For the most part, Parts 10, 11, and 16 are very similar, but there are some differences in Part 10. Part 10 is the only one which requires an operator's permit for the dispatcher (10.155 (e) (1). However, this does not have to be posted (10.156 (a). Also, in Part 10 the call sign is given every thirty minutes (10.152 (d)) instead of every fifteen minutes as is required in 11.152 (a) and 16.152 (a).

As most service shop owners know, a federal license does not necessarily make a good technician, and many excellent technicians have no license. The rules say adjustments may be made *under the supervision* of a first-class or second-class licensee, so not all of your technicians must have a license. It would certainly be advisable, though, since it would eliminate the necessity of supervision.

With present channel congestion, it might be well to remind licensees that *the law requires all communications,* regardless of nature, to be of *minimum* time. (10.151 (a), 11.151 (d), 16.151 (d). Section 11.151 (d) also requires that a standard operating procedure be used.

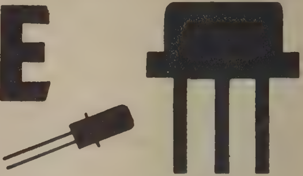
The General Electric Company has a paper called "Six Basic Rules of the Road for Two-Way Radio Users" which is an analogy between the use of an automobile and the use of a two-way radio system (G.E. No. ECR-701). This brings to my mind the thought of an automobile driving down the highway with only half a license tag. I refer to the widespread habit of dispatchers using the numbers only instead of the full call sign.

It is important for stations to properly identify themselves, but this can get somewhat involved in the case of mobile units. Read (and have your customers read) 10.152 (b) and (e), 11.152 (b) and (c) and 16.152 (b), taking particular note that in 16.152 (b) if a mobile identifier, such as "Acme 6", is used, it must be submitted to the Commission's Engineer-in-Charge for approval.

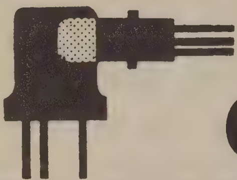
Sometimes a customer will want a microphone and speaker installed in a different office from his main dispatcher's office. In F.C.C. terminology, the dispatcher's office is the "control point" and the other microphone and speaker is a "dispatch point" (10.107, 11.107, 16.107). But you can't merely hook this microphone and speaker in parallel with the existing gear and be legal. The control point dispatcher (operator) must have a visual carrier-on indicator, must be able to monitor the dispatch point, and must be able to disable the dispatch point. The easiest thing to do is put a transmit pilot lamp at the dispatch point and then call it another control point. Then the user will have to modify his license to include this additional control point. A "dispatch point" does not have to be included on the station license, but if you install one, *be sure that it qualifies.*

* * * * *

It has been suggested by Lytle L. Smith, Norcom Communications Service Co., 3300 Turnpike Road, Portsmouth, Virginia, that all shops representing the same manufacturer use systems on the same frequency. This would facilitate service by shops in adjacent areas. Mr. Smith has already received many favorable comments on his suggestion and has tentatively selected 35.08 and 151.925 mc (no U.H.F. frequency has been selected.) Any comments would be appreciated. ■



SOLID STATE COMMUNICATIONS



DONALD L. STONER
D. L. Stoner Associates
Alta Loma, California

Last month the basic details of transistorized oscillators were discussed. To continue, let us examine the various types of crystal oscillators.

Generally speaking, crystal controlled oscillators and the free running types are quite similar. However, the stabilized oscillator employs a quartz crystal connected in series with the feedback path. The crystal operates on its series resonant frequency, where it exhibits a low impedance to the signal being returned to the input of the circuit.

Thus, in a properly designed circuit, the only output-input coupling which can occur is through the crystal and the coupled energy will be at the crystal frequency.

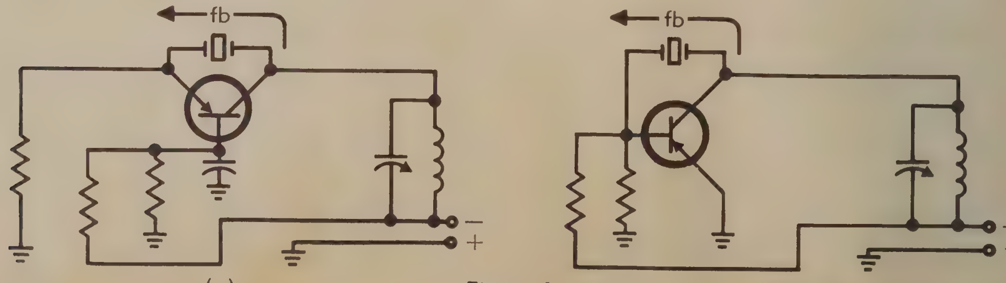
The key word in this last sentence is "properly" designed. If the feedback level is excessive, the crystal plates appear as sufficient capacitance to permit coupling of unwanted frequencies. The oscillator, although able to lock at the crystal frequency, will exhibit frequency pulling and jumping. Low output and poor efficiency will also be a byproduct of this poor design.

Figure 1 shows an example of this type of circuit. Note that the crystal is connected between the collector and emitter (a) or collector and base (b). If the crystal is replaced with a fixed capacitance equal to the holder capacitance, the circuit will oscillate with vigor at a frequency determined by the resonant frequency of the tank.

Occasionally one may see this circuit with a small capacitance connected in series with the crystal to reduce the feedback level. This does not indicate poor design, but may be required to provide a degree of phase correction with transistors operating near the alpha cutoff frequency.

High feedback levels may also be required with overtone crystals, particularly those operating on a 5th or 7th overtone. In these cases, the oscillator must be stabilized to prevent unwanted oscillation by neutralizing the holder capacitance. This can be done by shunting the crystal with a small inductance. The value of inductance must be sufficient to parallel-resonate with the capacitance of the crystal at the operating overtone frequency, or slightly higher.

The circuit shown in figure 2 is a favorite of this writer, for it works on



(a) Figure 1 (b)

any frequency within the capabilities of the transistor and exhibits excellent output with overtone and/or low activity crystals. Note that it is similar to the Colpitts circuit discussed last month with the exception of the crystal. Although the crystal appears to be grounded it is actually in series with the r.f. path from output to input. Although this was explained last month, it may be made clear without referring to this issue by examining the circuit in figure 2 (a). You will recall that the ground point is arbitrary and can be placed anywhere in the circuit.

The resonant frequency of the tuned circuit is determined by the value of C*ce* and C*eb* in series, which are in parallel with the inductance. These capacitors act as capacitive voltage dividers and the ratio determines the drive level in the feedback circuit.

These capacitors can make up the total tuned circuit capacitance (as in 2 b) or additional capacitance shunting the inductance can be used (as in 2 a). There will be no difference in the performance of the circuit since this added capacitance is not part of the divider circuit. However, if it is made variable, it provides an easy method of resonating the circuit.

The drive level will be determined by the ratio of the two divider capacitors. As C*eb* is made larger, the drive level decreases. As C*ce* is made smaller the same is true.

The circuit can be adjusted in the following manner: Remove the crystal so that the circuit is not oscillating. Use the bogey values shown in fig. 2 (a) and adjust the 22K resistor until the transistor is dissipating 1/3 of its maximum power. Then insert the crystal. If the drive is somewhere in the right county (as it would be with a 10 to 1 ratio of C*ce* and C*eb*) the collector current should increase.

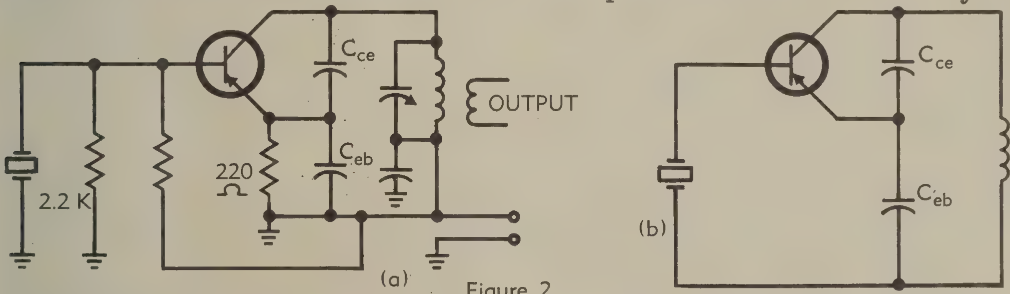


Figure 2

Now, adjust C*eb* while maintaining resonance in the tuned circuit until the transistor is dissipating the maximum permissible amount as indicated by collector current and voltage readings. This does *not* result in marginal design since the short duty cycle of the r.f. waveform does not produce the same internal heating as would maximum static dissipation.

In applications where maximum r.f. power output is required the circuit can be adjusted in a different manner. Connect a load (½ watt carbon resistor) to the link, the value of which approximates the input impedance of the driven transistor. If you are unable to determine this, a bogey value of 1000 ohms should be satisfactory.

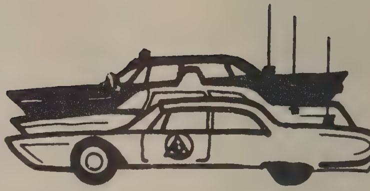
Then measure the voltage developed across C*eb* for maximum power output, while maintaining resonance of the tuned circuit. Check the voltage and current to establish that the transistor dissipation is not being exceeded.

If more power is required and/or it is not possible to approach the maximum dissipation figure the value of emitter resistance can be decreased. The collector current, and dissipation, should not be increased by changing the value of base-bias resistor in this case. The additional current flow through the transistor causes excessive voltage drop across the emitter resistor which results in insufficient working voltage for the transistor.

As a final test of performance the efficiency of the oscillator should be measured. As in vacuum tube circuitry, this is simply a ratio of input to output power. A figure of 30% is quite satisfactory in transistor circuitry since the feedback energy constitutes a substantial portion of the total available power.

(Continued on Page 15)

PUBLIC SAFETY COMMUNICATIONS



Material Prepared and Submitted by
ROBERT E. BROOKING
Communications Engineer
City of Burbank, California

What is believed to be a FIRST in Public Safety Communications took place at the Shoreham Hotel in Washington, D. C., on April 6, 1962. Representatives of four of the five organizations having responsibilities in the Public Safety Radio Services journeyed from the four corners of the United States to the District of Columbia to discuss means of more effectively meeting the problems facing the various licensees in the Public Safety Radio Services.

Out of the meeting came the formation of the "Public Safety Communications Council" to provide "a medium to review and project the public safety communications need" of the country and to "promote a closer liaison between the various public safety services in regulatory matters."

Representing the Eastern States Police Radio League were Capt. Edward F. Tierney, Cambridge, Mass., and Capt. Arthur Vickerson of Hyde Park, Mass.

The Forestry Conservation Communications Association was represented by President Raymond M. Littlejohn, of Columbia, S. C., and Max Guiberson, of Olympia, Wash. William Sanders, of Salem, Ore., attended as Technical Adviser for FCCA.

The International Municipal Signal Association was represented by President Kenneth W. Smith, of Alexandria, Va., and William H. Crocker, of Cambridge, Mass. Chief Thomas P. O'Brien, Chairman of the IMSA Radio Committee attended as technical adviser, and William H. Borghesani, Jr., attended as legal adviser.

Captain Joseph Marshall, President of Associated Public-Safety Communication Officers, hosted the meeting. Harvey Platt, of Riverside, Calif., was also a representative. Robert Brooking, Chairman of the Public Safety Planning Committee, attended as technical adviser, and Joseph M. Kittner as legal adviser.

The meeting came to order at 10:10 a.m. with President Marshall stating that "there are mutual problems in which the various organizations can and should work together." He went on to define the needs now and in the future in regard to space in the radio spectrum for the use of the Public Safety Services as our first area requiring a coordinated effort.

President Smith of IMSA offered the motion to formally create the Council, which was adopted unanimously.

President Littlejohn proposed the name Public Safety Communications Council in a motion which was adopted unanimously. Mr. Guiberson proposed that the committee consist of two members from each organization. Voting would be restricted to these members, but technical and legal advisors would be permitted to attend in an advisory capacity. Motion was adopted.

Pending formal drafting by the committee, its purpose was defined by those present: "To provide a medium to review and project the Public Safety Communications needs for the present and future and, to promote a closer liaison between the Public Safety Services in regard to regulatory matters." It was further agreed unanimously that there be a minimum of two meetings a year.

President Marshall stated that we now have a committee complete with a name and that now was the time to appoint the members. He appointed himself and Harvey Platt to represent APCO, with Bob Brooking as technical adviser.

President Smith appointed himself and Chief O'Brien to represent IMSA, with William Crocker as technical adviser.

President Littlejohn appointed himself and Max Guiberson as members representing FCCA, with William Sanders to be technical adviser or alternate in case of absence of a member.

Captain Tierney stated that he and Captain Vickerson would serve as de facto representatives of ESPRL until their Conference.

Mr. Guiberson and Captain Tierney were unanimously selected as Chairman and Vice-Chairman. Mr. Brooking was then selected as Secretary-Treasurer. On a motion by Chief O'Brien, Mr. Brooking was selected as technical adviser to the committee. It was agreed that the next meeting will be held in Chicago in October.

The committee then began deliberations concerning several dockets currently under consideration by the Commission.

Among the problems discussed was that of local government coordination. In this field the Council undertook the responsibility of determining how it might be possible to effect a suitable method of providing for local government coordination in the different parts of the country based on local conditions.

When these plans have been agreed on, they will be submitted to the various organizations for approval and submission to the Commission.

Stoner . . . from page 13

Next month class C r.f. power amplifiers will be discussed, along with design examples of the details which have been covered to date.

New Products of interest this month include an outstanding VHF-UHF transistor developed by Texas Instruments. Their developmental type number TIX-2000 features a calculated f*max* of 4.2 kmc, MAG of 12.5 db at 1 kmc., f*T* of 1.6 kmc and a typical noise figure of 3.5 db at 200 mc and 8.0 db at 1 kmc. This device makes possible the development of circuits well into the microwave region.

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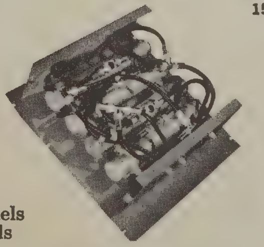

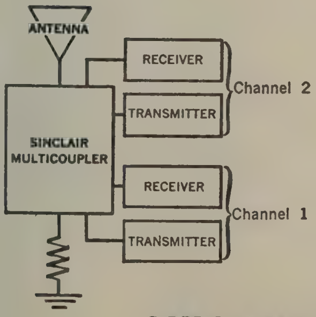

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20 MC to 10 KMC

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- 2 or more Duplex Channels
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OUR MAN IN WASHINGTON

Manager of Communication Horizons' Washington Office, Robert E. Tall, reports on the past month's communication activities

POLICE RULES TO STAY STRICT

The FCC issued " public notice" that it will not grant waiver requests to permit continuation of combined fire-and-police communications in the police radio service past the October 31, 1963, cutoff date.

In the notice, the Commission pointed out history of the combined service approach, and explained that the Local Government Radio Service was created for the express purpose of allowing the combination of any and all governmental communications.

"The most prevalent argument," said the Commission, "is that the rule provision requires an expenditure of funds and that such expense is not warranted. In this regard, the Commission advises that financial inconvenience cannot be permitted to override the urgent requirement that purity of communications be established in the Police Radio Service."

GUARD-BAND CHANNELS SOUGHT

Allocation of a new pair of frequencies, now in "guard bands" adjacent to the common-carrier channels, was asked by the Sunland-Tujunga Telephone Co., Sunland, Calif.

Specific frequencies asked were 152.84 mc, and 158.10 mc.

The firm explained in its petition to the FCC that a search of records showed all telephone-company frequencies in the area are already assigned.

DETROIT HEARINGS SET FOR MAY 15

Hearing on two applications for one-way selective-signalling service in Detroit have been set by James D. Cunningham, FCC chief hearing examiner, for May 15.

Applications involved are from Page Boy Radio Corp., for a new station, and from New York Technical Institute of Cincinnati, for modification of its existing station.

The Commission said, in setting the hearing, that the applications appear to be "mutually exclusive."

COLORADO ASKS WESTERN HEARING

The State of Colorado requested the FCC to schedule its oral argument on the state's request for rule waiver for a Colorado site rather than at the Commission's Washington offices.

No date has been set for the argument. Colorado authorities are seeking authority to continue their state-government radio network on police radio frequencies.

STOLEN EQUIPMENT

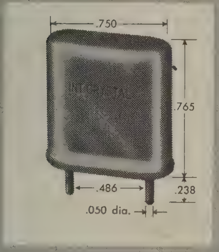
Theft of a two-way unit on MCC channel 1 frequency (158.49 transmit and 152.03 receive) in New York City was reported by Dahl W. Mack, Scranton, Pa., Outercom sales representative. Mack asked that he be notified if the unit, a model FM-50-A with serial number 2299, turns up at a service shop for repair or frequency change.

ALARM PROPOSAL HIT

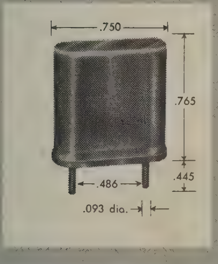
The Los Angeles Police Department added its opposition to that already

(Continued on page 18)

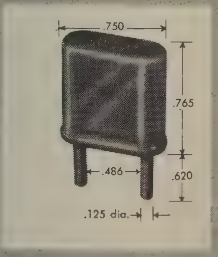
Custom made CRYSTALS



F-605



F-609



F-612

FREQUENCIES 70 KC TO 137 MC

DESCRIPTION AND DATA:

All of these crystals are of the plated, wire-mounted type. Low drift AT-cut blanks are used in these units above 500 KC, and low drift DT and CT-cut blanks are used in units below 500 KC; any crystal can be supplied for operation with or without an oven.

TEMPERATURE TOLERANCE:
AT—±.005% from —55° to +90°C.
±.002% from —30° to +60°C.
DT-CT—±.01% from —40° to +70°C.

CALIBRATION TOLERANCE:
Supplied to meet equipment manufacturers speifications and may be as close as .001% without oven or .0005% with oven. Where no equipment is specified the following will apply.
AT— .0025% of nominal at +30°C.
DT-CT— .01% of nominal at +30°C.

DRIVE LEVELS:
Maximum, AT—
10 milliwatts 500 KC to 999 KC
4 milliwatts 10,000 KC to 24,000 KC
2 milliwatts 25 MC to 137 MC
DT-CT—2 milliwatts

CIRCUIT: As specified by customer. Crystals are available for all major two-way equipment and in most cases the necessary correlation data is on file. Where circuit is not specified, the crystal will be calibrated for operation into a load capacitance of 32 mmf.

FREQUENCY RANGES AND MODES OF OPERATION

200-500 KC:
Operates on fundamental edge shear oscillation. Load capacitance 32 mmf . . . or as specified by customer. If load is not known specify circuit or equipment in which crystal will be used.

500-20,000 KC:
Operates on fundamental face shear oscillation. Load capacitance 32 mmf . . . or as specified by customer.

10-60 MC:
Operates on third mechanical overtone at anti-resonance. Will give reasonable output in tuned circuit.

60-100 MC:
Operates on fifth (or seventh) mechanical overtone at series-resonance. Drive level must be kept below 2 milliwatts.

ONE DAY SERVICE

Orders for less than five crystals are shipped within one working day following receipt of order (except low frequency and special crystals which require 10 to 30 days for processing). Orders received on Mon. thru Thurs. will be shipped the day following. Orders received on Fri. will be shipped the following Mon. Postage is prepaid within continental U.S. when cash accompanies order. All others are shipped F.O.B. Oklahoma City.

SUPPLY THIS INFORMATION WHEN ORDERING

MOTOROLA: Crystals can only be properly correlated for Motorola equipment if the crystal type number is given. Example: D02, R28, D03, etc. In cases where crystals are required for type D-14, 800 and 801 holders, always specify crystal frequency or the high IF frequency. Check whether the crystals are to be used in ovens.

GENERAL ELECTRIC: Specify model number of transmitter and receiver RF Decks. Example: 4ES13A3, 4ER24B1, 4ET5B3, etc. When ordering crystals for 450 MC equipment specify:

Receiver Crystals:
A. If they are heated or non-heated.
B. If the unit is AFC or NON-AFC Controlled.
C. Platter number of present receiver deck.

Transmitter Crystals:
A. If they are heated or non-heated.

R.C.A.: Specify model number of unit or MI Number of the crystal. Always indicate whether crystals are to be non-heated or heated type.

OTHERS: Specify model number of the receiver and transmitter as well as any formulae that pertain to the correct crystal calculation.

PRICES — F-605, F-609, F-612 CRYSTALS

Fundamental KC		Fundamental KC		Overtone MC	
200 - 499*	**$12.50**	3000 - 3999	**$5.75**	10 - 34.99	**$ 6.50**
500 - 849*	**15.00**	4000 - 5999	**5.00**	35 - 44.99	**7.00**
850 - 899*	**13.50**	6000 - 9499	**4.50**	45 - 60	**8.50**
900 - 999*	**12.50**	9500 - 10999	**5.00**	61 - 75	**10.50**
1000 - 1499†	**9.80**	11000 - 14999	**6.30**	76 - 137	**15.00**
1500 - 1999†	**7.50**	15000 - 20000	**8.00**		
2000 - 2999	**6.50**				

*Allow 10 to 30 days for processing. †Allow 2 to 3 days for processing.

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aimed at the FCC's mid-December proposal to allow operation of intruder and fire alarm systems on police frequencies.

Anthony J. Gain, L. A. P. D. communications engineer, said his department felt that the FCC proposal "would tend to aggravate an already serious frequency allocation problem."

'BELLBOY' SYSTEM APPROVED

A nine-station "Bellboy" radio paging system—the first for the Bell System—in the Seattle, Wash., area won FCC approval for installation as a developmental system.

The system was expected to be in operation by April 21, for display and use during the Seattle World's Fair.

Similar applications are on file for a 16-station system in Washington, D. C., and another system (also 16-station) in New York City. Only two of the three applications are expected to be granted, however.

SATELLITE STATIONS ASKED

Waco Communications, Inc., a Texas radio common carrier, asked the FCC to "promptly issue a notice of proposed rulemaking" to amend section 21.513 of the Commisssion rules so as to allow establishment of "satellite" base stations in the RCC service without requiring local control points for such stations.

The Texas firm cited its own situation as an example; the concern has applied for a base station near Youngsport, Texas, to extend its service for Waco subscribers—but within the present framework must also establish a control point at Youngsport, serving "a public he does not propose to serve" which "has not evidenced any demand or need for his service."

Requested is a rule change to allow remote-control base stations in such cases. The petition cited an NMRS study which showed a decrease in RCC service from 1959 to 1960.

POLICE RADIO CD POLICY SET

At the request of the Office of Civil Defense, the FCC spelled out Commission policy regarding CD communications on Police Radio Service frequencies.

Conditions which must be met for such communication to be legal, said the Commission, are that the CD communications "be designated as, and relate to, recognizable police activities."

The Commission suggested that "the officials of the governmental entities involved'' could best determine whether any specific activity were an "official" police function, but added that non-police activities could not be designated as police functions solely for radio communication purposes.

ELECTRONICS FIRMS' FUTURE 'BRIGHT'

Electronics offers "a bright future" for prospective small businesses, the Small Business Administration said in announcing availability of a study report on the subject.

The report, titled "A Study of Small Business in the Electronics Industry" and available from the Superintendent of Documents at $1.25 per copy, reviews the entire industry and includes communications and test instruments.

SELECTIVE SIGNALLERS WARNED

Licensees of one-way radio paging systems were warned by the FCC that selective signalling service is not legal unless telegraph type of emission is specified in the station license.

"Rendition of selective signalling service without such provision in the station license is not authorized," the Commission said.

MORE FEE OPPOSITION

More than two dozen separate municipal fire departments in Massachusetts added their comments to the growing stack of objections to proposed license-filing fees.

In addition to the firemen's filings, the American Radio Relay League asked a one-month comment-deadline extension to May 16.

The full list of organizations now officially opposing the proposal (reported in full in last month's CH) is already too long to publish. More than 30 groups, in addition to many individual amateur radio operators, have filed comments.

'SMALL FORFEITURES' BILL OKED

The house interstate and foreign commerce committee approved a bill giving the FCC authority to impose "small forfeitures" on certain rule violators. The only thing remaining before the bill becomes law is passage by the full house, and signing by President Kennedy.

The "small-forfeitures" bill had previously brought objections from FIRC and the American Bar Association; it had been passed by the senate last year but has now been changed to eliminate the objectionable provisions.

The measure provides for "forfeitures" not to exceed $100 for willful violation of rules concerning station identification and distress frequencies and messages. The Commission has requested this authority to deal with violations not considered serious enough to warrant currently available penalties such as license revocation or criminal action.

ASTRONOMY OPPOSED

The FCC proposal to delete the 40.66-40.70 mc portion of the sprectum from ISM use and assign it exclusively to radio astronomy drew opposition from Forest Industries Radio Communications. FIRC said that the forest products industry is making extensive use of equipment operating at 13.56 mc, which radiates 3rd-harmonic output at 40.68 mc and urged an FCC study to confirm this.

FREQUENCY REQUEST

Complete clearing of domestic public land mobile and rural radio services stations from the bands 454.675-455.000 mc and 459.675-460.000 mc by next January 1, to make way for a coast-to-coast public air-ground radiotelephone service was urged by the National Business Aircraft Association. NBAA, commenting on a request made by AT&T, urged action to provide the new service "on a regular basis at an early date."

FCC COMPUTER

Automatic plotting of service and interference contours, as well as rapid retrieval of information concerning "all existing" facilities, will be provided the FCC by a Univac III electronic computer system to be installed soon (if congress approves).

Purchase of the system at a cost of approximately $1 million was unanimously approved by the Commission after a two-year study. Initial emphasis is to be in the broadcasting and safety-special services fields.

RACEP UNDER TEST

The RACEP system of radio communications, which permits simultaneous transmission of voice and teletype communications by as many as 70 subscribers on a single radio channel, is now being tested by the Army and the

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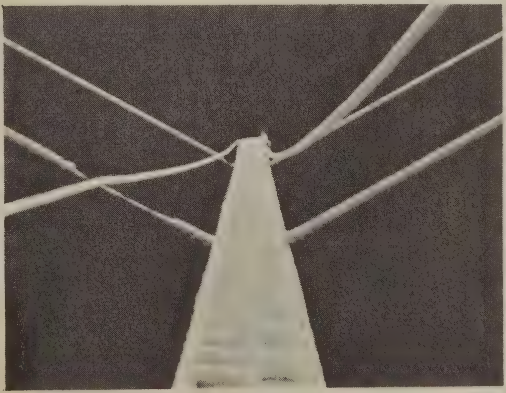

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Air Force, according to system developer Martin Marietta Corporation.

The new system, a time-and-frequency-multiplex pulse-modulation arrangement, is under anxious study by much of the communication industry as a possible future method of alleviating frequency congestion.

ELIGIBILITY EXPANSION?

Proposed changes to the manufactured radio service rules have been issued by the FCC. The changes would expand eligibility in that service to a subsidiary corporation which is devoted exclusively to providing services or materials for its parent or another subsidiary, in connection with any manufacturing activity presently eligible.

The Commission has invited comments on the proposal. In the meantime, action on an MRS application from Carbide Power Co., Sault Ste. Marie, (a firm which would be eligible under the new rule) was deferred until the rule proposal is final. ■

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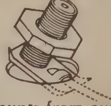
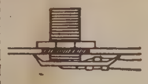

Mounts from outside by insertion through 7/8" hole.


Mounts flat; only uses 3/8" inside roof.

MODEL No. TG-1-R (144-470 mc.) PAT. PEND.

MODEL No. TG-1-R

- Will stand up to 150 watts RF power.
- Stainless spring steel whip 1/4 wave long. May be cut to your specific frequency.
- 144 to 470 mc.
- Comes complete with 12 foot cable, factory installed.

LIST PRICES

TG-1-R (incl. mount)	$8.25
TG-1-R (w/o mount)	$2.50
TGM-R (no antenna)	$6.25

SEE YOUR DISTRIBUTOR OR WRITE GAM DIRECT

G·A·M Electronics inc.

138 Lincoln St., Manchester, N. H

LOGBOOK

A handy calendar of important meetings and events of interest to mobile communications*

May 1—Comments due on FCC proposals to service — allocate the new split channels in the 25-42 mc mobile radio band.

May 4—FCC oral argument on examiner's initial decision involving applications for radio common carrier stations in four Florida cities.

May 15—FCC hearing on one-way signaling applications in Detroit, Mich., area.

May 16—Metropolitan New York Chapter Meeting of IRE Professional Group of Vehicular Communications.

May 16-18—Annual convention of Industrial Communications Association. Sheraton Chicago Hotel. Chicago.

May 18—Los Angeles Chapter Meeting of IRE Professional Group on Vehicular Communications.

May 28—Washington (D.C.) Chapter Meeting of IRE Professional Group on Vehicular Communications.

May 28—Deadline for comments on FCC rule proposals for amendment of Part 15 rules to change specifications for operation of low power communication devices on frequencies above 70 megacycles, such as garage door openers.

June 15—Los Angeles Chapter Meeting of IRE PGVC.

June 22—Deadline for reply comments in connection with FCC proposals to foster growth of UHF television, deintermix eight television market areas, and add new VHF TV assignments in eight other markets.

August 7-10—National conference of Associated Public - Safety Communication Officers. Harrison Hotel, Clearwater, Fla.

August 21-24—Western Electronics Show and Convention, Ambassador Hotel and Memorial Sports Arena, Los Angeles.

September 23-26—Annual conference of International Municipal Signal Association. Queen Elizabeth Hotel. Montreal.

October 23-25—Annual meeting of Communications & Signal Section of Association of American Railroads. Sheraton-Chicago Hotel. Chicago, Ill.

March 31, 1963—Licensees in the automotive Emergency service, as of April 1, 1958, may continue to operate on 35.70 mc or 35.98 mc until this date. Such users may, on or before this date, convert to the business radio service without changing frequency, or remain in the auto emergency service by changing frequency.

***If we have omitted a date of importance to the industry, drop CH Washington Bureau Chief Robert E. Tall a line at 1327 F Street N. W., Washington 5, D.C., and we will try to include it next month.** ■

COMING NEXT MONTH

Next month nearly 10,000 two-way communication engineers, technicians, salesmen, installers, and users will see the "new look" in COMMUNICATION HORIZONS. They will read, in the new large-size pages of CH, all about the latest developments affecting the professional communications industry. Our readers will learn in full detail about latest FCC action—and will be warned about upcoming events which will have great effect upon their two-way operations. Every reader of CH will be informed of important technical developments, systems engineering, and new products that **you** need to know about to keep **your** communications system performing at peak efficiency.

WILL YOU BE ONE OF THEM?

You will be, if you fill in the subscription form on the reverse side of this card, and mail it immediately. Do it **today**—to be sure of getting for 12 months (or more) the very latest in current news of the Communications Field. The sooner you act, the more you'll get for your money! But be sure to subscribe **now,** to get "the new look" CH from the very first issue.

YES — ENTER MY SUBSCRIPTION TODAY

for ....16 issues of Communication Horizons at the special price of $4.00. **I am mailing this form before May 1, 1962.**

........15 issues of Communication Horizons at the special price of $4.00. **I am mailing this form before May 8, 1962.**

........14 issues of Communication Horizons at the special price of $4.00. **I am mailing this form before May 15, 1962.**

........13 issues of Communication Horizons at the special price of $4.00. **I am mailing this form before May 20, 1962.**

........12 issues of Communication Horizons, $4.00. **I am mailing this form after May 20, 1962.**

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Radio Call Sign..

Address..

City/Town.. **Zone**........ **State**..............................

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Oklahoma City 1, Okla.

In The June Communication Horizons

THE LEGAL SPECTRUM

Inaugurating a New Department in Communication Horizons with coverage-in-depth of the Richmond antenna-height case by the conductor of the new department

JEROME COURTNEY

plus the "new look" and many other up-to-the minute features.
watch for it all . . . in June

CH SHOWCASE

NEW PRODUCTS IN THE PROFESSIONAL COMMUNICATIONS FIELD

JOHNSON ENTERS TWO-WAY

The E. F. Johnson Co., Waseca, Minn., long-time manufacturer of ham and Class D citizens band equipment, entered the commercial two-way industry with announcement of their "Messenger 202" self-contained transceiver for use by business, industrial and emergency systems.

Type-accepted under parts 10, 11, and 16 of the FCC regulations, the Messenger 202 features 400- to 1600-square-mile coverage base-to-mobile, at a cost less than $200 per unit.

Operating in the 25-50 mc. bands, with type 8A3 emission, the Messenger 202 is crystal-controlled and surpasses FCC requirements for attenuation of spurious and harmonic radiation, the manufacturer reports. Power output is rated at 6 watts into a 50-ohm load.

The receiver section's sensitivity is rated at 0.4 microvolt (at the antenna terminal) for 10-db. signal/noise ratio with 30 percent modulation. Selectivity is 5 kc at 6 db down and 40 kc at 60 db down. Images and other spurious responses are attenuated a minimum of 30 db; most are kept below -60 db.

Messenger 202

Three models of the unit are available; one is for operation from 115-volt AC lines only, while the others are dual-powered — taking power either from the AC line or from a mobile battery. One is for 115/6-volt operation, and the other for 115/12-volt installations.

For complete specifications, contact Art Taylor at Johnson, and tell him you saw it in CH.

NEW TWIN-TRIODE FOR MOBILES

A new high-mu twin triode high-reliability tube, designed especially for use in 12-volt mobile systems, has been announced by RCA's Electron Tube Division.

The new tube, the type 7898, is intended for use in oscillator, mixer, limiter, and DC-amplifier applications. Its heater may be operated over a voltage range from 12 to 15 volts, with momentary excursions from 11 to 16 volts. The tube is subjected to severe heater-cycling tests to assure dependable performance in mobile service.

An additional feature of the new tube is RCA's new "Dark Heater." This heater operates at temperatures substantially lower than conventional types, to insure long heater life and increased stability of tube characteristics.

Technical data on the RCA-7898 may be obtained from the Electron Tube Division, Harrison, N. J.

MOBILE DUPLEXER

A lightweight, compact, portable duplexer for mobile use which allows simultaneous transmission and reception from one antenna is offered by Sinclair Radio Laboratories.

Designated the model J-150-2X Mobile Duplexer, the unit will handle 30 watts RF (continuous-duty rating) and has a maximum insertion loss of 0.5 db at the transmitter and 0.8 db at the receiver. It provides 45 db of isolation from receiver to transmitter.

Weighing only 1½ pounds and measuring only 2 by 4 by 6 inches, the J-

150-2X is designed especially for auto, boat, or train operation. It can be adjusted to operating frequencies with standard bench equipment.

Full specifications and prices may be obtained from C. H. Onofrio, Sinclair Radio Laboratories, Inc., Box 23, Tonawanda, New York.

6146, NEWEST MODEL

The "compactron" concept, originated by General Electric to simplify packaging of entertainment-type components, has now paid off for the two-way field with the "compactronization" of the old standby, the 6146.

The new model — designated as type 7984 — is not only smaller than the prototype, because of removal of the plate cap, but delivers more output at 175 mc. with less input!

Rated output power of the 7984 is 46 watts, nearly ⅓ again more than the 35-watt rating of the 6146 under similar conditions.

The new tube is designated and rated specifically for VHF mobile service; it has a nominal 12-volt heater. Engineering samples are immediately available; production quantities are scheduled to be available in August at prices comparable to that of the 6146.

For complete specifications or other details, write S. E. McCallum, Receiving Tube Department, General Electric, Owensboro, Kentucky. Tell him you saw it in CH Showcase.

GABRIEL'S HORN

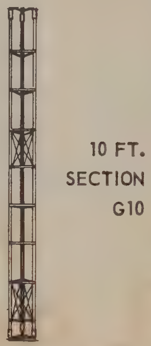
A microwave parabolic antenna feed with VSWR not exceeding 1.05 over any regular frequency subdivision within the 5925-8500 mc band has been announced by Gabriel Corporation's Electronics Division.

Designated the "Low VSWR Hop-stretcher Feed", the new unit achieves its unusual characteristics by a unique regular-to-half-height, multi-step Tchebyscheff transformer, the manufacturer explains.

For complete information and specifications data contact Gabriel Electronics Division, Millis, Mass.

NEW TOWER

A lightweight tower, weighing only 29 pounds per 10-foot section yet able to stand 40 feet unguyed or go to 210 feet with proper guys, has been introduced by E-Z Way Towers, Inc., Tampa, Fla.



The new tower, designated model G-10, is fabricated of high tensile steel rated at 55,000 PSI. The manufacturer says this is the greatest strength tubing used in any tower. Standard E-Z Way features of electric arc welding throughout and hot-dipped galvanized coating are also included.

Leg members are spaced 9¾ inches on centers, with horizontal members spaced 14⅝ inches. Eight taper top sections are available, together with assorted base mounts and building brackets to meet virtually any requirement.

Speed of erection is another feature; the manufacturer reports that two men can erect a 60-foot G-10 in two hours. Dealer price is $16.95 per 10-foot section; the G-10 is available from stock. For additional details, contact Clarence Jax, sales manager, at 5901 E. Broadway, Tampa, Fla.

UNIVERSAL REPLACEMENT DIODE

Diode-replacement problems received at least a partial answer with Raytheon's annnouncement of a "universal" diode which can replace more than 80 types of general-purpose and high-voltage silicon units.

Maximum ratings (at 25 degrees C) of the new RD250 include an average rectified current of 200 mA, a one-second surge current of 1 ampere, and 250-mw power dissipation. Immediately available, the RD250 is priced at $1.48 in quantities of one to 99.

For complete specifications, contact Alan Maier, Raytheon Company, Semiconductor Division, 900 Chelmsford Street, Lowell, Mass.

PEOPLE, PLACES and things

A Report on Important Personnel, Plant and System Changes During the Past 30 Days

People . . .

Promotions and appointments continued apace this month, with The Hallicrafters Co. reporting nine executive sales appointments and General Electric naming a long-time two-way administrator as manager of its new Distribution Planning area.

Marshall

Heading the Hallicrafters list was new general sales manager Travis Marshall. With the firm since 1952, Marshall had been sales manager for amateur radio equipment and short wave listening receivers since 1954.

Others in the list included Ben D. Drezner, named manager of national accounts and export; L. P. Hench, national sales manager in charge of the field sales organization; James Byrne, manager of customer relations (a new department combining general service, sales order, and sales service operations), and Fritz A. Franke, manager of new product planning.

Regional sales managers completing the list were W. B. Sawyer, southeast; Earl W. Gray, east central; L. J. Shidaker, west central; and J. R. McCaffery, western.

At General Electric, T. O. Jackson was named manager of distribution planning for G-E mobile radio equipment, a new position at G-E's communication products department's Lynchburg, Va., headquarters.

A sales administrator at Lynchburg since 1958, Jackson has been with G-E since 1946. He will be responsible for the development of management sales control plans for the mobile product distribution organization, and will also be in charge of activities related to franchises of G-E sales and service organizations throughout the nation.

Places . . .

Places in the news this month ranged from Burbank, Calif., where Gonset moved aggressively into the two-way field, to outer space.

Outer space entered the two-way news through the fact that the "Orbiting Solar Observatory I" marked the 20th successful satellite to use Sonotone's sealed nicad battery cells. Cells similar to those used in OSO-I are available for consumer use, Sonotone advises.

They announced a 12-page catalog on the cells, available from them at Elmsford, New York.

Gonset's move toward orbit appeared to gain momentum (see PPT, last month) with announcement of their first item for the commercial user — the model G-151 high-band FM transceiver.

Simultaneously with announcement of the G-151, the 25-year-old communications equipment firm launched a drive to recruit distributors on a nationwide basis.

Lewis E. Gillingham, general sales manager, listed advantages offered by his firm as: (1) the highest powered 150 mc unit, priced under $400 retail; (2) a definite plan for introduction of a complete line of equipment including coding devices; (3) a "sizeable" national advertising program, (4) a license assistance program, and (5) a "sizeable" margin of profit for the distributor.

Gillingham asked that anyone desiring additional information concerning a distributor franchise contact him at 801 S. Main Street, Burbank, Calif.

And Things . . .

A tiny fully-transistorized personal two-way system, an anti-obsolescence guarantee for tube testers, and a host of new catalogs and data releases round out the "things" category this month.

The "personal two-way" system was announced by G-E's communications products department, a national distributor of the unit which is manufactured by Micro Communications, Denver. Operating in the 406-470 mc band, the total weight of the two-case "Tiny Talky" system is 2 pounds 4 ounces.

With acquisition of distribution rights to this unit, G-E claimed to be the first company in the industry to offer a "full" UHF and VHF-FM line of miniaturized units.

The tube-tester guarantee was announced by Seco Electronics, Inc., of Minneapolis. Prompted by the flood of new tube types made available in the past year, the guarantee provides for making up-to-date Seco's model 88, model 107A, and model 350 tube testers for 12 months from the date of original purchase without cost to the purchaser. Either adaptor kits or set-up data, as necessary, will be supplied by the firm. For additional information, contact the manufacturer at 5015 Penn Ave. S., Minneapolis 19, Minn.

Catalog releases announced include a 40-page listing of ceramic capacitors made by Hi-Q Division, Aerovox Corporation (*Myrtle Beach, S. C.*); a 24-page "quick reference catalog" of fans and blowers (*Rotron Manufacturing Co., Inc., Woodstock, N. Y.*); a bulletin describing Philco's CMT-9 series of microwave equipment (*Leo Sands, Communications and Weapons Division, Philco Corporation, 4700 Wissahickon Ave., Philadelphia, Pa.*); and technical information on formvar-coated and polyester-coated magnet wire (*two bulletins; MW-1004 from Robert Akin III, Hudson Wire Company, 62 Water Street, Ossining, N. Y.; polyester bulletin from Hudson Wire Company, Magnet Wire Division, Winsted, Conn.*)

CALLING ALL TECHNICIANS!

Every two-way installer and maintenance man has his own way of doing things. As an integral part of our upcoming "new look" at CH, we invite you to send along hints, kinks, circuit modifications, new schematics, or photos showing how **you** do things. We are particularly interested in "unusual" antenna installations, "first of a kind" installations, shop-tested modifications of existing equipment, field-tested servicing tricks and short-cuts, and time-saving methods of equipment installation and pullout. In addition, we would like to see any and all servicing-type tips you believe are not generally known outside your area.

We will pay from $5 to $25 for all such material we use—price depends on originality, usefulness, etc. **Help us help you!**

Conelrad . . . from page 8

reasonable opportunities when the public could have been given some indication.

The FCC has been asked point-blank **"What gives?"** The answer is **"We don't know."**

There **have** been recent FCC enforcement cases stemming from a mobile licensee's not being equipped with a Conelrad alerting mechanism, but even here, the recent cases have been brought to a head **only** because the licensee involved **has not answered the Commission's letters.**

Is the situation ridiculous? **Yes!**

Is the answer obvious? **No!**

Will something happen soon? **Yes!**

What will it be? If you know, please let the FCC (and me) know!

At any rate, when the story finally **does** break, you can be sure you'll read the full details first right here in the pages of Communication Horizons.

Not 20 Questions . . . just three*

1 **Question:** How do you market your products?

Answer: *To the consumer—of course!*

If you are reading this message, it is because you have a vital interest in two-way communications. You know something? So do we! Communication Horizons is so vitally concerned with the two-way radio industry that we provide a magazine directed at the very heart of the field . . . the seller, installer, and serviceman. The operations manager, the executive, the designer. The engineer, and the technician.

2 **Question:** Are these the people you sell your products to?

Answer: *Chances are . . . you do.*

Next month Communications Horizons will be one year old . . . 12 issues in all. If you sell your products and services under the trade names of *Gertsch, Lampkin, Motorola, General Electric, RCA, DB Products, Miniquip, Prodelin, Comco, Petersen, Newtronics, Apelco, Plas-Tron, Gonset, Delco, ITT, Secode,* or *General Radiotelephone* . . . please take special note of our forthcoming birthday. We've been around a year now . . . and are growing stronger with every issue.

3 **Question:** Are we ready to accept additional advertising now?

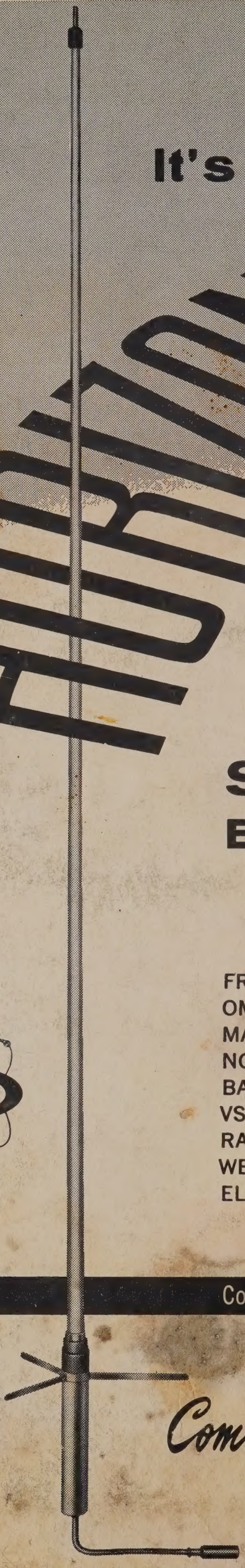
Answer: ***We will never be more ready!***

Read over Editor Kyle's editorial on page 1, this issue, and then drop us a line or pick up the telephone. As always, you may call collect here in Oklahoma City (area code 405) at CEntral 2-1108, attention Bob Cooper, Publisher.

* with answers too!

COMMUNICATION HORIZONS

THE PROFESSIONAL COMMUNICATIONS MAGAZINE



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Base Station Antenna

Cat. No. 200-509

SINCE 1933

FREQUENCY RANGE	144-174 Mc
OMNIDIRECTIONAL GAIN	5.8 db
MAXIMUM POWER INPUT	500 watts
NOMINAL INPUT IMPEDANCE	50 ohms
BANDWIDTH	± 0.3%
VSWR	1.5:1
RATED WIND VELOCITY	100 MPH
WEIGHT	30 lbs.
ELEMENT HOUSING LENGTH	19′

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